

Does Students' Adoption of Block Mode of Teaching Boost Positive Learning Outcomes in Tertiary Sector?

* Amir Hossein Ghapanchi ^{1,2}

¹College of Engineering and Science,
Victoria University, Melbourne, Australia
Amir.Ghapanchi@vu.edu.au

² The Institute for Sustainable Industries and Liveable Cities,
Victoria University, Melbourne, Australia

* Corresponding author

Afroz Purarjomandlangrudi
School of Information Systems,
Holmes Institute, Melbourne, Australia
APurar@holmes.edu.au

Yuan Miao

¹College of Engineering and Science,
Victoria University, Melbourne, Australia
Yuan.Miao@vu.edu.au

Abstract

Block Mode teaching delivery, or intensive mode teaching, is a condensed style of teaching in which classes are scheduled in an intensive period. This paper examines the impact of students' utilisation of the Block Mode of teaching on positive learning outcomes such as student's retention, satisfaction, learning outcomes and graduate outcome. Data is collected via an online questionnaire from 74 participants studying in Block Mode in one of Australia universities. The findings shows that students' utilisation of the Block Mode of teaching significantly and positively impacts positive learning outcomes in terms of student's retention, satisfaction, learning outcomes and graduate outcome. The findings of the current study have important implications for researchers and practitioners.

Keywords: Block mode of teaching; intensive mode of teaching; positive learning outcomes; innovation adoption.

1. Introduction

Block Mode (BM) teaching delivery, or intensive mode teaching, is a condensed style of teaching in which classes are scheduled in an intensive period that could be as short as 1 week, where students focus on less number of subjects at a time, usually one subject at a time ([Male et al., 2016](#)). Implementing Block Mode of teaching has attained high popularity and interests in recent time ([Sidiroglou & Fernandes, 2019](#)). This mode of delivery has been extensively used by postgraduate students who work full-time or students who need more time off-campus for practical experiences ([Davies, 2006](#)).

Block mode of teaching has potential to enhance student performance ([Karaksha et al., 2013](#)) and higher students' satisfaction with their subjects ([Burton & Nesbit, 2008](#)). Many studies have addressed the educational benefits and costs of block scheduling though few have documented its impact on the students learning outcome and academic success. There seems to be limited recommendations for the impact of intensive mode on student positive learning outcome, and current literature mostly focus on comparing intensive mode with the traditional mode in terms of different factors such as efficacy and

2. Research Background &

Hypotheses Development

Higher education has experienced different challenges and changes where the traditional modes of teaching delivery have not been efficient enough to cater the needs of the current learners ([Burton & Nesbit, 2008](#)). To embrace these changes and provide more efficient teaching method, educational sectors offer various modes of deliveries such as intensive mode, also calls Block Mode (BM) of teaching ([Dexter et al., 2006](#); [Karaksha et al., 2013](#); [Lawrence & McPherson, 2000](#)). Block scheduled class is described as "accelerated, time shortened, block format, compressed, or intensive modes of delivery" ([Davies, 2006](#)). The authors makes the definition

popularity ([Burton & Nesbit, 2008](#); [Mitchell & Brodmerkel, 2021](#)). This study however focuses on investigating the impact of students' adoption of the Block mode of teaching on students' positive learning outcome. The research question underlying this study is:

RQ) What is the impact of students' adoption of block mode on positive learning outcomes in tertiary sector?

Although many higher education institutions across the world utilize the BM for their teaching and learning activities, there seems to be a lack in research which examines the impact of Block Mode adoption on positive learning outcomes of learners. This study has investigated the impact of students' adoption of BM on student's retention, satisfaction, learning outcomes and graduate outcome.

The remainder of this paper is as follows. Following this present introduction section, research background and hypotheses development are explained. Next, research design is introduced, followed by analysis and research results. Finally, discussion of findings and conclusions are presented.

of block mode as "very large chunks of teaching time, for example whole day sessions, offered in weeklong mode, two or three week long mode and weekend mode" as stated by [Davies \(2006, p.1\)](#).

The educational benefits and advantages of the block scheduling have been investigated in the literature by many studies though few have focused on its impact on the learning outcomes and student's satisfaction. [Argawu \(2020\)](#) discuss the factors like schedule type, gender, father's education level, class attending status, group activity participation, and friendship status have significant association with students'

marks in introduction to Statistics course in two different departments at Ambo University, 2018/19. The impact of condensed delivery on the academic achievement, learning experiences in Bachelor of Nursing Science course at an Australian regional university is explored by [Reinke \(2018\)](#). The researcher has also concluded that development of students' awareness of how they study, and the effectiveness of their study practices may help them to develop self-regulated learning.

Views, practice and challenges of block mode teaching approach are also examined in the literature and the results show students background, scarcity of resources, mode of delivery, teachers workload and students lack of awareness on the approach, discovered to be the

main factors which are hindering the effective implementation of modular teaching approach ([Shemelis & Eba, 2017](#)). The influence of BM on student participation and learning ([Ibrahim, 2018](#)), satisfaction and performance ([Loton et al., 2020](#); [Sidiroglou & Fernandes, 2019](#)), engagement and quality of learning ([Li & Antiohos, 2021](#)), and academic success along with their positive perceptions toward it ([Klein et al., 2020](#)) are also investigated. [Burton and Nesbit \(2002\)](#) discussed that there are some factors affecting the student's acceptance of Block Mode (BM). Their results show that there is a positive trend for those students working full time to choose a block course. Students' beliefs about their own ability and their prior experiences with blocked courses can positively impact their choice of doing a blocked course as well.

3. Research Design

Our literature review shows that there is a lack of research which investigate the impact of students' adoption of Block Mode on students' positive learning outcomes. Therefore, the objective of this research is to explore the impact of

students' adoption of Block Mode on student's retention, satisfaction, learning outcomes and graduate outcome. Figure 1 shows the conceptual model underlying the present research.

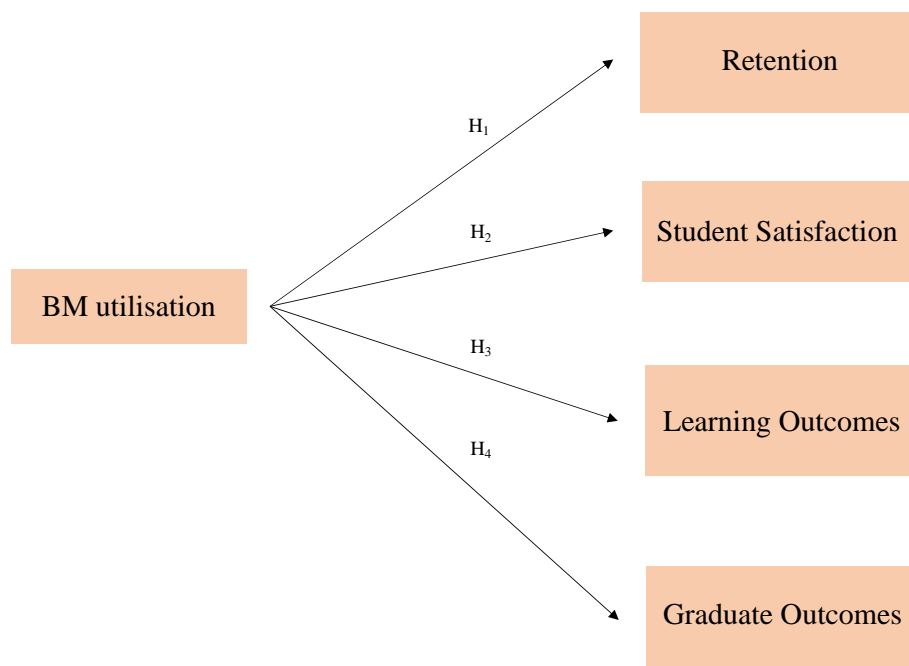


Figure 1. The conceptual model for the current study

3.1 Hypothesis Development:

Dynamic Capabilities (DCs) model that was developed during 1990s, is very popular when it comes to evaluate the impact of capabilities on performance. It was proposed formally by Teece et al. (1997) for the first time. They conceptualized DCs as “the firm’s ability to integrate, build and reconfigure internal and external competences to address rapidly changing environments” (p. 516). DCs are capable of purposefully creating, amplifying, and modifying their resource bases (Teece, 2019; Teece et al., 1997). They later revealed articles to shed more lights on the DCs as develop

new products, processes, and services; create, adapt, improve and, if necessary, substitute business models; perfect absorptive capacity through learning activities and accumulation of skills.” (Teece, 2007, 2014).

Considering BM of delivery as a new processes of organization’s DCs (based on new DCs mentioned above) and the student’s retention, satisfaction, learning outcomes and graduate outcome as organizational performance, we could hypothesise that the BM of delivery can impact positive learning outcomes according to DCs model (Figure 2).

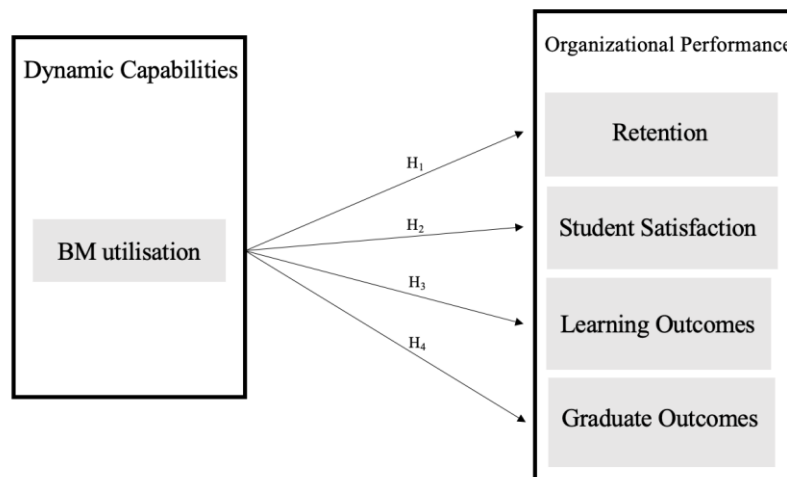


Figure 2. The conceptual model for the current study

Working from these arguments, and within the research framework shown in this study, we raise the following hypotheses:

- H1: There is a positive and significant relationship between BM utilisation and student’s Retention;
- H2: There is a positive and significant relationship between BM utilisation and student’s satisfaction;
- H3: There is a positive and significant relationship between BM utilisation and student’s learning outcomes;
- H4: There is a positive and significant relationship between BM utilisation and student’s graduate outcome.

4. Data analysis and Results

One of the main Objectives of this quantitative research study is to measure, investigate, and validate the proposed research hypotheses. To do so, a questionnaire has been developed through a careful review and evaluation of related instruments in the literature. Previously developed questionnaires in the literature have been reviewed and through a selection process, several indicators have been selected for the selected constructs. The data were collected from undergraduate students studying in block mode in a faculty in one of Australian universities. The survey includes concept-based questions and analysed participants' level of agreement with various questions based on a five point Likert scale approach ([Matell & Jacoby, 1971](#)), and 74 participants completed the survey.

To analyse the hypotheses and research model, Partial Least Squares (PLS) was used due to its ability to predict the

variability of the dependent construct and to manage reflective measures ([Eikebrokk & Olsen, 2007](#)). This method can predict the interrelationship between multiple independent and dependant variables while supporting unobserved or undefined variables ([Gefen et al., 2000](#)). PLS is a component-based technique that "focuses on maximizing the variance of the dependent variables explained by the independent ones instead of reproducing the empirical covariance matrix" ([Haenlein & Kaplan, 2004, p. 290](#)).

Figure 3 illustrates some demographic statistics about the respondents. It shows that 81.3% of the respondents were male and 18.7% were female. 62.7% of the respondents were domestic students and 37.3% were international students. 26.7% of the respondents were aged 18 to 20, 40% were aged 21 to 25, and 33.3% were 25 or older. Among all participants, 97.3% were studying full-time.

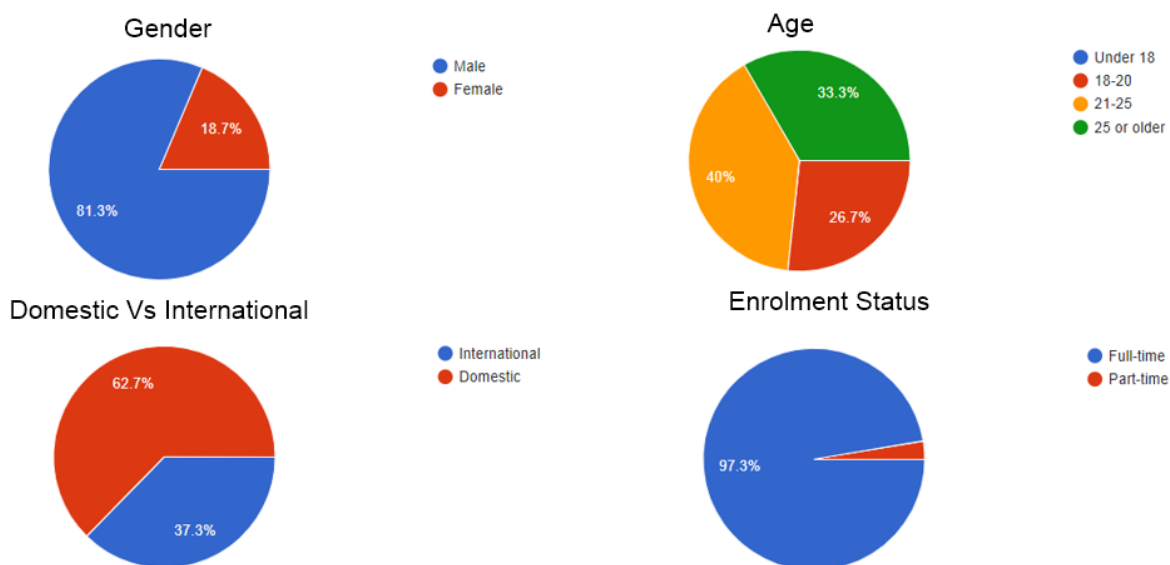


Figure 3. Demographic statistics regarding the pool of respondents

To validate the proposed hypotheses, Confirmatory Factor Analysis (CFA), which is a form of factor analysis, is employed to use factor loading to find out whether the data fits a hypothesised measurement model ([Brown, 2015](#)).

Based on [Chin et al. \(2003\)](#) and [Hulland \(1999\)](#), the factor loadings assessment is the first criterion to decide whether or not to include or exclude an indicator in the CFA. Indicators' loading on their associated factor should be higher than

0.60 or preferably 0.70 or above, which shows that each indicator explains at least 50% of the variance of the corresponding latent variable (Chin, 1998; Hulland & Business, 1999). Table 1

shows the results of CFA for the proposed model and it represents that all of the indicators have loading factors above 0.7, which means that all of them are accepted at this stage.

Table 1 Error! No text of specified style in document.. Factor Loadings

Variable/indicator	Loading
BM Utilisation	
BMU1	0.947
BMU2	0.958
Retention	
RET1	0.984
RET2	0.981
Students' Satisfaction	
SAT1	1.000
Learning Outcomes	
LO1	0.911
LO2	0.959
Graduate Outcomes	
GRADO	1.000

Table 2 shows the outcome of hypothesis testing. It presents the path coefficient, which is produced to indicate the strength of interrelationships between the

independent and dependent latent variables (Hair et al., 2011) and T-values for each hypothesis.

Table 2. The results of hypothesis testing

Hypothesis		Path Coefficient	T Statistics	Confirmed/Not confirmed
H ₁	BM Utilisation => Retention	0.669****	10.031	Confirmed
H ₂	BM Utilisation => Students' Satisfaction	0.648****	7.836	Confirmed
H ₃	BM Utilisation => Learning Outcomes	0.602****	6.537	Confirmed
H ₄	BM Utilisation => Graduate Outcomes	0.558****	5.665	Confirmed

** significant at 0.05 level; *** significant at 0.01 level; **** significant at 0.001 level

Hypothesis 1: Table 2 indicates that "BM utilisation" has a substantial positive effect on "Retention". The path coefficient between "BM utilisation" and "Retention", is 0.669 (T-value=10.031), which is confirmed at the significance level of 0.001.

Hypothesis 2: The results show that "BM utilisation" can positively impact "Students' Satisfaction" with a path coefficient of 0.648 (T-value=7.836), which is confirmed at the significance level of 0.001. Thus, Hypothesis 2 is supported and confirmed.

Hypothesis 3: According to Table 2 that "BM utilisation" has a remarkable positive impact on "Learning Outcomes" (path coefficient 0.602, T-value 6.537). Therefore, hypothesis 3 is confirmed at the significance level of 0.001.

Hypothesis 4: The result verified "BM utilisation" has a positive direct effect on "Graduate Outcomes" at a 0.001 significance level with a path coefficient of 0.558 and T-value 5.665. Therefore, hypothesis 5 is also confirmed.

5. Conclusion and Discussions

This study examined the impact of students' utilisation of the BM of teaching on positive learning outcomes in terms of student's retention, satisfaction, learning outcomes and graduate outcome. The findings show that BM utilisation significantly and positively impacts all these Four constructs and can play an important role to improve these outcomes. The findings of the current study can have important implications for top managers in tertiary sector institutions, curriculum designers, subject instructors, lecturers, conveners and so on. They can assure an improved student learning outcomes by enhancing students' utilisation of block mode (intensive mode) delivery in their subject designs. Thus by employing various strategies, such as providing an orientation session in the beginning of the block to enhance students' awareness of block mode of delivery, providing enough resources to assist students with their study, having a balanced workload for students throughout the block, such practitioners can ensure increased students' performance.

References:

- Argawu, A. S. (2020). Comparison of Students' Marks Between Block and Semester Based Schedules and Its Factors in Introduction to Statistics Course: The Case of Two Departments in Ambo University.
- Brown, T. A. (2015). *Confirmatory factor analysis for applied research*. Guilford publications.
- Burton, S., & Nesbit, P. (2002). An analysis of student and faculty attitudes to intensive teaching.

Burton, S., & Nesbit, P. L. (2008). Block or traditional? An analysis of student choice of teaching format. *Journal of Management & Organization*, 14(1), 4-19.

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Chin, W. W., Marcolin, B. L., & Newsted, P. R. (2003). A partial least squares latent variable modeling approach for measuring interaction effects: Results from a Monte Carlo simulation study and an electronic-mail emotion/adoption study. *Information Systems Research*, 14(2), 189-217.

Davies, W. M. (2006). Intensive teaching formats: A review. *Issues in Educational Research*, 16(1), 1-20.

Dexter, K. M., Tai, R. H., & Sadler, P. M. (2006). Traditional and block scheduling for college science preparation: A comparison of college science success of students who report different high school scheduling plans. *The High School Journal*, 89(4), 22-33.

Eikebrokk, T. R., & Olsen, D. H. (2007). An empirical investigation of competency factors affecting e-business success in European SMEs. *Information & Management*, 44(4), 364-383.

Gefen, D., Straub, D., & Boudreau, M.-C. (2000). Structural equation modeling and regression: Guidelines for research practice. *Communications of the association for information systems*, 4(1), 7.

Haenlein, M., & Kaplan, A. M. (2004). A beginner's guide to partial least squares analysis. *Understanding statistics*, 3(4), 283-297.

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing theory and Practice*, 19(2), 139-152.

Hulland, J. (1999). Use of partial least squares (PLS) in strategic management research: A review of four recent studies. *Strategic management journal*, 20(2), 195-204.

Hulland, J., & Business, R. I. S. o. (1999). Use of partial least squares (PLS) in strategic management research: A review of four recent studies. *Strategic management journal*, 20(2), 195-204.

Ibrahim, F. (2018). Discussion Structure: Does it influence student participation and learning through online interactions with Block Mode students? *International Journal of Social Research & Innovation*, 1(1).

Karaksha, A., Anoopkumar-Dukie, S., Grant, G., Davey, A. K., Nirthanan, S. N., Arora, D., Hope, D., Bernaitis, N., McFarland, A., & Hall, S. (2013). Benefits of intensive mode teaching to improve student performance. 2013 Conference 18th-20th November, Seville, Spain. Available at: http://www98.griffith.edu.au/dspace/bitstream/handle/10072/59795/90003_1.pdf,

- Klein, R., Kelly, K., Sinnayah, P., & Winchester, M. (2020). The VU way: The effect of intensive block mode teaching on repeating students. *International Journal of Innovation in Science and Mathematics Education*, 27(9).
- Lawrence, W. W., & McPherson, D. D. (2000). A comparative study of block scheduling and traditional scheduling on academic achievement. *Journal of instructional psychology*, 27(3), 178.
- Li, R., & Antiohos, A. (2021). Problem Based Learning (PBL) in four-week term block mode teaching. 2021 IEEE Global Engineering Education Conference (EDUCON),
- Loton, D., Stein, C., Parker, P., & Weaven, M. (2020). Introducing block mode to first-year university students: a natural experiment on satisfaction and performance. *Studies in Higher Education*, 1-24.
- Male, S., Baillie, C., Hancock, P., Leggoe, J., MacNish, C., & Crispin, S. (2016). Intensive mode teaching good practice report. Students Transitions Achievement Retention & Success Conference, Adelaide. Retrieved,
- Matell, M. S., & Jacoby, J. (1971). Is there an optimal number of alternatives for Likert scale items? Study I: Reliability and validity. *Educational and psychological measurement*, 31(3), 657-674.
- Mitchell, M., & Brodmerkel, S. (2021). Highly intensive teaching in tertiary education: A review of recent scholarship. *Stagnancy Issues and Change Initiatives for Global Education in the Digital Age*, 190-210.
- Reinke, N. B. (2018). The impact of timetable changes on student achievement and learning experiences. *Nurse Education Today*, 62, 137-142.
- Shemelis, M., & Eba, M. Y. (2017). MODULAR TEACHING APPROACH IN UNDERGRADUATE PROGRAM AND ITS IMPLICATION ON QUALITY EDUCATION: THE CASE OF MIZAN-TEPI UNIVERSITY. *Editorial Board*, 6(3), 164.
- Sidirolglou, F., & Fernandes, N. (2019). The impact of blended learning on student performance in an intensive block mode teaching setting. The International Conference on Information Communication Technologies in Education 2019. Proceedings,
- Teece, D. J. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic management journal*, 28(13), 1319-1350.
- Teece, D. J. (2014). A dynamic capabilities-based entrepreneurial theory of the multinational enterprise. *Journal of international business studies*, 45(1), 8-37.

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic management journal*, 18(7), 509-533.